

A Compact Self-Switching/Modulation 2 micron Ceramic Laser, Phase I

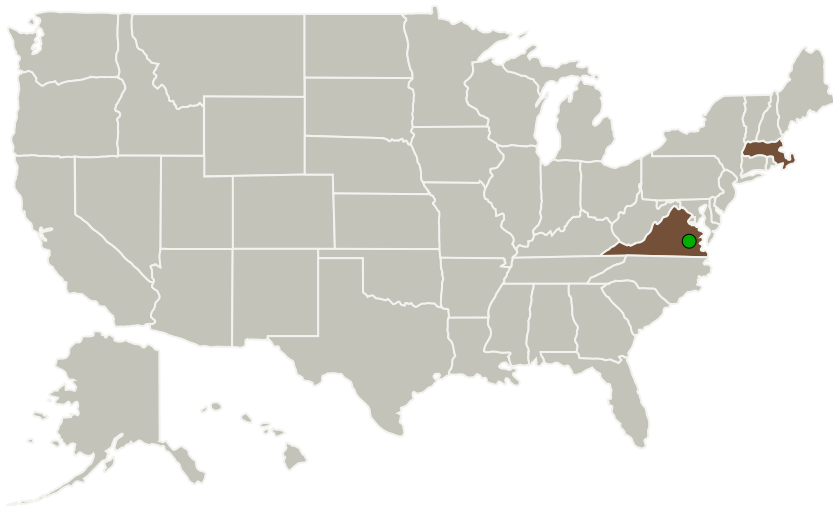
Completed Technology Project (2010 - 2010)



Project Introduction

For remote sensing of laser/lidar technology and global environment monitoring applications, the pulsed coherent Doppler lidars are of considerable contemporary interest as an effective tool. At present, the coherent 2- μm laser radar has been used to replaced CO₂ gas laser (10.6- μm) for its higher spatial and velocity resolution. Considering the commercial 2 micron laser systems are complex and expensive, Boston Applied Technologies proposes a new laser gain medium by a revolutionary ceramic laser material technology where the host ceramic is highly transparent, active and possess electro-optic character itself. By doping with specified rare earth ions, it is easily to reach the 2- μm emission. The resultant laser transmitter will be an all solid-state, diode-pumped, room-temperature operation, 2 micron laser system producing laser pulses of 2 to 200 mJ at 10 to 200 Hz repetition rate. This all diode-pumped laser will be compact, reliable, cost-effective and also capable of operating in aircraft and planetary environmental extremes.

Primary U.S. Work Locations and Key Partners



A Compact Self-Switching/Modulation 2 micron Ceramic Laser, Phase I

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3
Target Destinations	3

A Compact Self-Switching/Modulation 2 micron Ceramic Laser, Phase I

Completed Technology Project (2010 - 2010)



Organizations Performing Work	Role	Type	Location
Boston Applied Technologies, Inc.	Lead Organization	Industry Minority-Owned Business	Woburn, Massachusetts
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations

Massachusetts	Virginia
---------------	----------

Project Transitions

▶ **January 2010:** Project Start

✓ **July 2010:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/138718>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Boston Applied Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

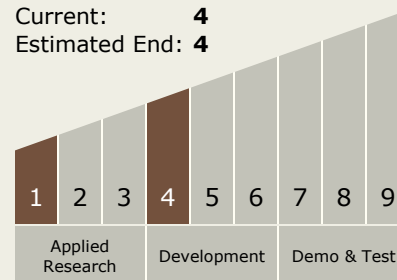
Run Zhang

Technology Maturity (TRL)

Start: 1

Current: 4

Estimated End: 4



A Compact Self-Switching/Modulation 2 micron Ceramic Laser, Phase I

Completed Technology Project (2010 - 2010)



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.5 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System